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VERSION MARKED TO SHOW CHANGES MADE:

Therefore, the vaporization heat quantity of the liquified gas is small and a [proper] sufficient feeling of cooling cannot be obtained. On the other hand, when the ratio is more than 5.0, the injection time is long or the stop time is short. Therefore, the vaporization heat quantity of the liquified gas is too large so that [the supercooling is caused] excessive cooling occurs, causing the user to feel a pain.

IN THE CLAIMS:

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C1 1. (Amended) An intermittent aerosol dispensing device for application of a product to skin of a human being wherein a ratio of an injection time to a stop time is set to 0.1 to 5.0, when an injection button is operated, in order to obtain a sufficient yet not excessive cooling and/or massage effect on the skin.

2. (Amended) An intermittent aerosol dispensing device for application of a product to skin of a human being wherein the product contains 20 to 70% by weight of a liquified gas in an aerosol composition, and a ratio of an injection time to a stop time is set to 0.1 to 5.0, when an injection button is operated, in order to obtain a sufficient yet not excessive cooling and/or massage effect on the skin.

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3. (Amended) An intermittent aerosol dispensing device for application of a product to skin of a human being wherein the product contains 0.1% to 5% by weight of a compressed gas in an aerosol composition, and a ratio of an injection time to a stop time is set to 0.1 to 2.0, when an injection button is operated, in order to obtain a sufficient yet not excessive massage effect on the skin.

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5. (Amended) The intermittent aerosol dispensing device of claim 1, wherein a cycle of injection and stop is performed 1 to 25 times per second.

6. (Amended) The intermittent aerosol dispensing device of claim 2, wherein a cycle of injection and stop is performed 1 to 25 times per second.

7. (Amended) The intermittent aerosol dispensing device of claim 3, wherein a cycle of injection and stop is performed 1 to 25 times per second.

Please add the following new claims:

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8. The dispensing device of claim 1, wherein said product comprises a propellant and a skin care effective component.

9. The dispensing device of claim 1, wherein said product comprises a propellant and a cleansing agent.

10. The dispensing device of claim 1, wherein said product comprises a propellant and a moisturizing agent.

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11. The dispensing device of claim 1, wherein said product comprises a propellant and a deodorizer

12. The dispensing device of claim 1, wherein said product comprises a propellant and an aromatic.

13. The dispensing device of claim 1, wherein said product comprises a propellant and an anodyne.

14. The dispensing device of claim 1, wherein said product comprises a propellant and an antiphlogistic.

15. The dispensing device of claim 1, wherein said product comprises a propellant and an astringent.

16. The dispensing device of claim 1, wherein said product comprises a propellant and an antipruritic.

17. The dispensing device of claim 1, wherein said product comprises a propellant and a repellent.

18. The dispensing device of claim 1, wherein said product comprises a propellant and an ultraviolet absorber.

19. The dispensing device of claim 1, wherein said product comprises a propellant and an antiseptic.

20. The dispensing device of claim 1, wherein said product comprises a propellant and a fungicide.

21. The dispensing device of claim 1, wherein said product comprises a propellant and a pharmaceutical.

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REMARKS

Applicants acknowledge receipt of the 1st Action of 27 AUG. 2002 and request reconsideration of the claims, as amended. Independent claims 1-3 have been amended to highlight the inventive concept and to emphasize the massage and cooling features disclosed respectively at specification page 3, lines 1-5, and page 5, lines 1-5. When the propellant is a liquified gas, as discussed on page 17, a cooling effect can be obtained. When the propellant is a compressed gas (e.g. nitrogen), as discussed at page 19, top, a massage effect can be obtained, as indicated in Table 6 on page 23. Dependent claims 8-21 have been added, directed to features disclosed at page 7, lines 7-9, page 8, line 24, through page 9, line 3, and page 2, line 2.

Specification page 1 explains that there are two major problems with continuous dispensing (referred to as "injection") of an aerosol product for topical application: **dripping** of the condensed product on the skin, and **excessive cooling** of the skin due to heat loss by evaporation of the propellant, causing pain to the user. Both of these problems are cured by the intermittent topical application system of the present invention, in which the spraying is cycled on and off between 1 and 25 times per second. The specific ratio chosen will depend on the viscosity and vaporization properties of the particular product being sprayed. If one sprays a more viscous product, one needs to worry less about dripping, and one can increase the ratio. If one sprays a quickly evaporating product such as dimethylether (DME, see page 17, line 17), the cooling effect is increased, and one must reduce the ON fraction of time in each cycle. These problems mainly occur with topical application of a product, so a solution is not likely to be found in other contexts of aerosol use.

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CLAIM REJECTION - SECTION 103(a)

Claims 1-3 and 5-7 were rejected, based on KURZ/SOCIETE DETEC (UK Patent 1,573,969) which discloses a system for misting antiseptics or insecticides in stock-breeding premises such as pig farms (see col. 2, lines 56-62). Intermittent dispensing and two "reservoirs of mist" coupled together are used, *in order to avoid running out of product*. Although the Office conceded that the reference "does not teach the instant ratio of injection time to stop time," it was contended that "One having ordinary skill in the art would have been expected to determine the optimum ratio through routine experimentation."

Each of the KURZ independent claims (1 and 13) recites the purpose of diffusion of mist "into the atmosphere" so any teaching by KURZ of what is an "optimum ratio" would have that purpose in mind. How "intermittent" to make dispensing into the air of a pig farm would have more to do with the ventilation conditions there, than with the condensation or evaporation effects of the mist sprayed. This is doubtless why KURZ fails to give any example of what frequency of an ON/OFF cycle or duty ratio would be desirable. About all the KURZ disclosure has in common with the present invention is the word "intermittent." KURZ certainly fails to suggest any ON/OFF cycle whose period is one second or less, as recited in the present independent claims. Since KURZ does not contemplate topical application to the human body of what he is dispensing, he clearly does not appreciate or suggest the advantages of the dispensing cycle of the present invention for topical application of any of the specific products recited in dependent claims 8-21. Reconsideration and withdrawal of the section 103 rejection is therefore solicited.

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No additional claims fee or extension fee is believed required; if any is required, please charge to Deposit Account 23-0442.

If the Examiner notes any remaining informalities in the application, or wishes to make any suggestions to place the application in condition for allowance, he is invited to telephone the undersigned.

Respectfully submitted,

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1. (Amended) An intermittent [injection] aerosol dispensing device for application of a product [for a] to skin of a human being wherein

a ratio of an injection time to a stop time is set to 0.1 to 5.0, when an injection button is operated, in order to obtain a sufficient yet not excessive cooling and/or massage effect on the skin.

2. (Amended) An intermittent [injection] aerosol dispensing device for application of a product [for a] to skin of a human being wherein

the product contains 20 to 70% by weight of a liquified gas in an aerosol composition, and

a ratio of an injection time to a stop time is set to 0.1 to 5.0, when an injection button is operated, in order to obtain a sufficient yet not excessive cooling and/or massage effect on the skin.

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3. (Amended) An intermittent [injection] aerosol dispensing device for application of a product [for a] to skin of a human being wherein

the product contains 0.1% to 5% by weight of a compressed gas in an aerosol composition, and

a ratio of an injection time to a stop time is set to 0.1 to 2.0, when an injection button is operated, in order to obtain a sufficient yet not excessive massage effect on the skin.

5. (Amended) The intermittent [injection] aerosol dispensing device [product for a skin] of claim 1, wherein a cycle of injection and stop is performed 1 to 25 times per second.

6. (Amended) The intermittent [injection] aerosol dispensing device [product for a skin] of claim 2, wherein a cycle of injection and stop is performed 1 to 25 times per second.

7. (Amended) The intermittent [injection] aerosol dispensing device [product for a skin] of claim 3, wherein a cycle of injection and stop is performed 1 to 25 times per second.